Indulging in the 'Mediterranean Maritime World' – Diving Tourism in Insular Territories

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Abstract. Island regions in the Mediterranean have so far been highly attractive tourism destinations due to their mild climate, relaxing atmosphere and the warm Mediterranean spirit, culture and hospitality. However, the repercussions of the prevailing polarized and mass tourism model are already noticeable in their bodies. These, coupled with the predicted impacts of climate change (CC), can jeopardize islands' socio-economic and environmental stability. In seeking to achieve sustainable and resilient developmental pathways, new more qualitative tourism options need to be pursued, bridging valuable competencies of Mediterranean islands, i.e. their natural/cultural wealth, both inland and underwater, with demanding, authentic and experience-based tourism offers. Diving tourism represents a challenging, though yet not fully exploited, option in this respect and lies at the heart of this work. More specifically, potential for diving tourism in Mediterranean islands is explored by: sketching the policy context of the very essence of this tourism form, i.e. protection of natural and cultural resources; displaying current successful examples in the Mediterranean and the Greek context; and featuring marine spatial and other planning and policy concerns for releasing this islands' development potential and grasping opportunities of a rapidly escalating niche market in a sustainable and resilient way.

Keywords: Island territories · Mediterranean region · Underwater natural and cultural heritage · Diving tourism · Marine spatial planning

1 Introduction

Proximity of the Mediterranean coastal and island regions to the water element and their strong connection with the maritime world as the 'vehicle' for commercial transactions and intercultural exchange of their population has sculpted through time their social and cultural wealth and attractiveness [1]. Such attributes are nowadays highly appreciated by visitors, acknowledging also the mild climate, relaxing atmosphere and the warm Mediterranean spirit, culture and hospitality these send out [2, 3].

Mediterranean islands are representative examples of such regions, being by far the most highly appreciated world destinations [3]. In 2018 for example, Malta, Cyprus, Crete and the Ionian Islands are falling into the top four European tourism destinations

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[4]. However, post-war developments of tourism sector in Mediterranean islands designate mainly a *mass and largely unsustainable polarized model* [5, 6], with severe repercussions in terms of seasonality, carrying capacity of ecosystems [7], and environmental burden, to name a few. Additionally, land sealing for massive tourist infrastructure deployment in coastal areas has led to the reduction of limited land, disruptions of coastal ecosystems, intense energy consumption as well as social and sectoral conflicts. This *polarized tourism model* in coastal areas – both in main land and especially island territories –, is currently highly *vulnerable* due to CC impacts, principally referring to heat and sea level rising as well as coastal erosion [8]. Realization of the significance of *CC impacts* on the socio-economic stability of, particularly, insular areas is crucial [8], placing at stake fishing and agriculture, but also coastal and maritime tourism as pillars of island economies [9]. Vulnerability of insular areas to CC is further worsened due to their limited capacity to design and implement efficient proactive policy measures. The currently ominous CC trends, however, call for urgent immediate (re)action and a reorientation from the mass to a more *sustainable, environmentally-friendly and responsible, resilient and all year round tourism model*, mainly featured by alternative tourism forms that are better adjusted to CC conditions, carrying capacity and competencies of such territories. This reorientation can also alleviate risks imposed by other external crises, e.g. COVID-19 pandemic, rendering mass tourism a restrictive travelling option [10] and unveiling the power of alternative forms for a dynamic post-pandemic tourism revival.

Maritime tourism, combined with *sea and coastal zone* soft recreational activities, is nowadays rapidly evolving [11]; and is recognized as a form of sustainable and resilient exploitation of natural and cultural, of land and maritime nature, capital. It is currently perceived as one of the most dynamic sea- and coastal-based sector for growth and job creation, in alignment with the European Blue Growth Strategy [12]. Of growing popularity is also a specific maritime tourism form, i.e. *diving tourism* (or scuba diving) [13, 14], deemed as a rapidly evolving niche market (over 27 million divers were certified from 1967 to 2018 [15]); and falling into the dominant trend for personalized, culture- and nature-based, sophisticated and authentic experiences [3, 16]. Diving tourism features a tailor-made and individualized form, primarily targeting elite, demanding, higher spending and all year-round tourist flows [17]; and addressing an environmentally-aware and keen on gathering new experiences in the spectacular maritime world community.

Diving destinations in Mediterranean islands offer a favorable environment, attributed to the unique wealth of *natural and cultural reserves*, such as coral reefs, protected species of flora and fauna as well as plenty of *Underwater Cultural Heritage* (UCH) sites. Diving in UCH sites in particular, especially in *historical wrecks*, has become extremely popular in recent times, presenting a chance to explore a peculiar, and largely unknown, part of the local, European or even global history, lying sunk at the bottom of the sea in harmony with surrounding extraordinary marine ecosystems [18]. UCH sites in the Mediterranean are, in many cases, linked to battlegrounds where historical martial events have occurred, witnessed through e.g. martial installations' sites, sunken ship and plane wrecks of World War (WW) I and II [1, 19]. Despite the rich WW I and especially WW II UCH evidence in the Mediterranean Sea however, the potential of *cultural diving tourism* is not yet fully exploited. This is, among others, mainly due to technical, legislative, governance, but also spatial delineation of these heritage sites,

with the latter placing at stake vulnerable and valuable natural and cultural assets due to their exposure to human-induced pressures, e.g. overfishing, coastal zones' pollution to name a few [6].

Along these lines, the *goal* of this article is to open up the discourse as to the hidden underwater natural and cultural wealth of the Mediterranean region; and its exploitation for unfolding diving tourism potential and featuring alternative, sustainable and resilient, natural and cultural heritage-led and environmentally-friendly developmental pathways of Mediterranean islands. Towards this end, in Sect. 2, a review of current policy and legal considerations on the protection of marine natural and UCH resources – the decision environment – is carried out. Section 3 wanders in the Mediterranean by providing good practices of diving activity in coastal and insular areas. In Sect. 4, diving and UCH tourism potential in the Greek territory is sketched which, despite the distinguishable natural and cultural maritime resources, these remain unexploited mainly due to multiple legislative and planning barriers. Finally, in Sect. 5, certain (spatial) planning concerns for the integrated and sustainable diving tourism development in the Mediterranean Islands are articulated.

2 Protecting Marine Natural and Cultural Resources – An Issue of Glocal Relevance

A *healthy and wealthy* marine environment is a key driver for the sustainable development of island regions, while forming the ground for deploying *diving tourism activity.* It is linked to the sustainable management of natural and/or UCH resources of relevant sites, the protection and preservation of which is substantial for fulfilling expectations of both the demand – cultural and diving tourism community –, and the supply side – local entrepreneurship in relevant sites, targeting growth and employment objectives. However, the *multi-level and multi-sectoral* dimensions of both the natural and cultural (UCH) resources render their protection a *complex* but also, in many cases, *glocal* (global and local) *issue.* As such, it calls for policy guidelines that rest upon the international, European, national, regional and even the local level.

With regard to UCH, its precise definition as well as conditions for protection and sustainable exploitation is demarcated in the *2001 UNESCO Convention* [20] on the 'Protection of the Underwater Cultural Heritage', in accordance with the Law of the Sea [21]. In this Convention, UCH is defined as "*all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years*" [20, Article 1, p. 51]. As such are featured e.g. sunken vessels or aircraft or any part thereof, their cargo or other contents, together with their *archaeological and natural context*. Value of UCH is entrenched on social, historical, environmental, humanistic and cultural dimensions. When it comes to shipwrecks, however, value is decisively enriched by a series of events that occurred before, during and after its immersion, coupled with information regarding submersion period, last trip purpose, etc. [22]. The above factors, although crucial for shipwreck's value assessment, are not included in the UNESCO Convention, considering only *time* as a decisive UCH assessment criterion (sunk vessels > 100 years), excluding

thus e.g. WW II shipwrecks; while its adoption by only 58 countries places at risk of loss a significant part of global UCH.

Sustainable exploitation of the *marine environment and related resources* is nowadays acquiring special attention at the *EU level* as well. Important milestones in this respect are the *Integrated Maritime Policy* (IMP) and *Blue Growth Strategy*, reflecting the will to open up the field of sustainable exploitation of European Seas to the benefit of growth and employment. Ambitious EU *goals* are mainly articulated in the:

- *Integrated Maritime Policy (IMP)* [23]: emphasizing the need for creating optimal conditions for the sustainable growth of maritime sectors and coastal regions; while ensuring achievement of the environmental objectives of EU.
- *Marine Strategy Framework Directive* [24]: aiming at the protection of the marine environment as a precious heritage; and motivating member states to deploy marine strategies and undertake action for its protection, preservation, and, where feasible, restoration.
- *Protocol on Integrated Coastal Zone Management* (ICZM) [25]: having at its heart the Mediterranean coastal zones, it features an inclusive approach for addressing problems emerging from high pressures exerted on the Mediterranean marine environment and coastal resources; and provides guidance towards a more sustainable development of these zones.
- *EU Biodiversity Strategy for 2020* [26]: predicting the design of measures to preserve vulnerable marine ecosystems (Action 14, p. 14) and the support of implementation of the Marine Strategy Framework Directive.
- *Blue Growth Strategy* [27]: focusing on the sustainable exploitation of marine resources as a driving force and a new source of economic prosperity. Maritime tourism is one of the five priority sectors of this strategy, targeting environmentally and culturally-friendly forms for serving local and regional development objectives.
- *Maritime Spatial Planning Directive (MSP)* [28]: representing the main IMP tool and a framework for properly handling available maritime space and resources. It aims at spatially balancing sectoral interests and achieving sustainable use of marine resources in line with the EU Sustainable Development Strategy. UCH protection and diving activity are parts of MSPs, same as Marine Protected Areas (MPA), with both serving eco-systems and diving sites' protection.
- *EU Biodiversity Strategy for 2030* [29]: predicting the preparation of national maritime spatial plans by member states in 2021. These cover all maritime sectors as well as area-based conservation and management; while they also address the protection of, among others, marine ecosystems.
- *European Strategy for more Growth and Jobs in Coastal and Maritime Tourism* [30]: promoting sustainable coastal and maritime tourism based on data collection, alternative tourism forms and stakeholders' engagement in MSP processes. It stresses the importance of (U)CH-based tourism and Underwater Archaeological Parks (UAPs) as pillars for sustainable tourism in coastal and island regions.

Review of the above key policy frameworks leads to the conclusion that while protection of *maritime natural and UCH sites* and their sustainable exploitation as *diving*

tourism spots for serving local development and wealth is highlighted, no specific directions are provided at this level. Maritime tourism in general and diving tourism in natural and UCH sites in particular are supposed to be dealt with in relevant national, regional or even transnational MSP studies. However, the yet limited deployment of relevant strategic marine spatial plans and their specialization at lower spatial scales counteracts this providence. It has to be admitted though that MSP and ICZM definitely establish a more promising *maritime decision-making framework* for delineating diving tourism sites and tackling maritime sectoral competition as well as pressure exerted on them by other maritime activities (e.g. fishing, sea transportation).

3 'Diving' in the Mediterranean – Successful Examples of Natural and Cultural Underwater Sites

Mediterranean insular territories are endowed with spectacular underwater marine reserves. Additionally, as hosts of important civilizations and battlegrounds (e.g., WW I and II), they constitute significant UCH repositories, such as submerged cities and ancient ports, a large number of WW I and II UCH objects. The latter count over 15.000 wrecks [31]; and witness the dramatic repercussions of war events, but also ancient commercial shipping failures. Based on these assets, many Mediterranean islands form nowadays outstanding and some of the most visited *diving spots*, located in highly rated tourism destinations, like Portugal, Spain, Italy, France and Greece [32]. In most cases, these diving spots are featured as *diving parks* or MPAs, thus assuring documentation, protection and sustainable exploitation of local underwater assets. Few notable examples of these spots are presented in the following.

3.1 The Medes Islands in Spain

The Medes Islands, situated in the heart of the Costa Brava, Catalonia region, Spain, constitute one of the most visited and significant MPA in the western Mediterranean. MPA's sensitive ecosystem protection is pursued through the establishment of 0.39 km^2 (2%) of fully protected areas, 4.24 km^2 (21.8%) of partially protected areas and 14.85 km^2 (76.2%) of unprotected areas [33]. Although well known as a *natural reserve* (underwater corals, caves and plenty of flora and fauna species) (Fig. 1), it provides the chance for diving in the *Reggio Messina (115 m long)* in Medes Islands, the largest ship in Costa Brava, sunk deliberately in 1991 (Fig. 2); and *Avenire (47 m long)*, being sunk in a fierce storm near Cala Montgó cove in 1971 [34].

The official launch of the MPA is dated back to 1983. Protection status predicts prohibition of fishery and extraction of live marine species in a zone of 75 m around the islands. This status was extended in 1990, when the Marine Partial Nature Reserve was established, prohibiting all forms of fishing and harvesting of marine resource and the possession of fishing gear. Ten years later the reserve was transformed into a much larger *marine and terrestrial natural park*, allowing the integrated land and underwater management and protection of this area. Within the park and buffer zone, certain controlled traditional and recreational fishing activities are permitted. The extension was critical for improving MPA's environmental status, enabling integrated management and encouraging *nature-based responsible tourism.*

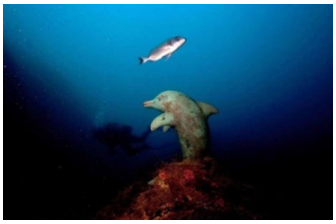

Fig. 1. The Dolphin Cave in Medes Islands, Source: [35]



Fig. 2. The Reggio Messina in Medes Islands, Source: [36]

The *number of diving visitors* in Medes Islands is defined in alignment to the restrictions of its protection status. An annual threshold, set by the Catalonia Government, predicts a maximum of 74,876 dives per year, allowing more divers to be part of the diving experience in the Medes Islands. Diving activity has a remarkable economic impact for the surrounding area, as showcased by the 10 million € revenue per year only for a small destination such as L'Estartit-Medes Islands [37].

3.2 Portofino Marine Protected Area in Genoa - Italy

In 1999, the Portofino MPA was established covering 3.74 km^2, both in land and underwater environment, and 13 km of coastline in the north-western coast of Italy in the Ligurian Sea [38]. The MPA was created in order for the underwater *cultural and natural landscapes* to be preserved and protected. It operates under a three-zoning plan, defining zone-specific regulations and restrictions. Human activities, including diving, fishing and anchoring are regulated and monitored. *Twenty authorized sites* can be found in the demarcated area (Fig. 3), featuring reefs, walls, the statue of the Crist of the Abyss and *16 shipwrecks* [39].

Portofino MPA is a *natural and cultural heritage diving area* attracting, in an annual basis, an average of 40,000 dives [38, 40]. Divers are wandering along coralliferous cliffs, a habitat of European interest and particularly vulnerable to mechanical damages. The most popular spots are the natural landscapes of the Carega Shoal (spot 11), the Althare Point (spot 17) and the Faro Cape (spot 21) [40]. Collection and uploading in a relevant website of diverse diving sites' information [location, depth, expertise required for each site, (e.g. Fig. 4), booking services etc.] for all 20 authorized sites is carried out by Portofino divers' community through *crowdsourcing* initiatives. Local population was against the establishment of the MPA, raising concerns as to its impacts on tourism flows and local revenues, emerging from limitations within the MPA's zones. However, and despite the reduced visitation in certain periods [38], MPA deployment has positively affected tourist flows and especially diving tourism [42], while keeping also track with a more sustainable and environmentally-friendly model and respective branding of the place.

3.3 Shipwreck Diving Destination in Malta

An outstanding example of *popular diving spots* in the Mediterranean is the island of Malta, a *wreck diving destination* with over 80 plane and ship wrecks at varying depths

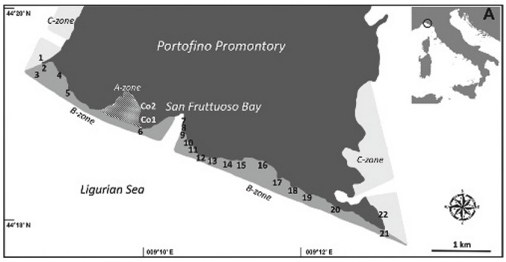

Fig. 3. Map of the Portofino MPA with numbered diving sites, Source: [40]

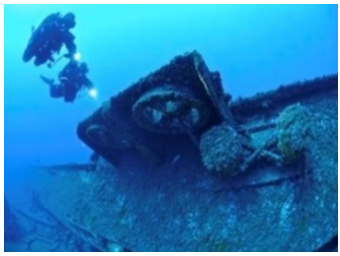

Fig. 4. MOHAWK DEER Wreck at the Portofino MPA, Source: [41]

around the coast, serving diversifying divers' experience levels. From the 2.77 million inbound tourists in 2019, approximately 6,5% have experienced diving activity (approx. 182,000 divers per year) [43], largely contributing to tourism attractiveness and local revenue. Preservation status and wreck diving in Malta have not so far been regulated. This entails risks as to the protection/preservation of UCH and raises safety issues for divers. A new regulation though is about to come in force soon, enforcing controlled access to a significant number of WW I and II underwater wrecks to Maltese and foreign divers. So far, about one-third of Malta's seabed has been thoroughly mapped, a process that started some 20 years ago and is expected to result in unimagined documentation [44].



Fig. 5. The MV Xlendi, Cominoland, Karwela off Xatt l-Aħmar site in Malta, Source: [45]



Fig. 6. St. Michael wreck – Marsaskala, Source: [45]

Today Malta has established *7 conservation areas* around certain wrecks, already known as diving spots. Indicative examples are: MV Xlendi, Cominoland, Karwela off Xatt l-Aħmar (three particular diving spots in three different wrecks in close distance) (Fig. 5); Um el Faroud in Wied Iż-Żurrieq; Tug St. Michael (Fig. 6), Tug 10 in Marsaskala; Imperial Eagle off Qawra Point; Rożi, P29 off Ċirkewwa; Blenheim Bomber off Xrobb l-Għaġin; and Bristol Beaufighter off Exiles Point. Each region includes different, properly combined, natural and cultural assets, based on their proximity. For example, the Um el Faroud in Wied Iż-Żurrieq site refers to the Libyan oil tanker "MV Um El Faroud" and its transformation to an artificial reef.

4 Potential of Greece in Diving and Underwater Cultural Tourism

The inextricable link of Greece to the sea is uncurled along the 15.000 km of coastline, 40% of which are linked to its 9,837 islands and islets [46]. The Greek maritime environment is featured by unique *natural attributes*, e.g. coastline configurations, NATURA 2000 regions and wetlands. Additionally, the Mediterranean climatic conditions create natural landscapes that host a large variety of endemic and rare fauna and flora [47]. Apart from their exquisite *natural attributes*, islands are hosts of extraordinary *tangible and intangible cultural resources*, both in the land and marine environment. *Maritime UCH* is mainly the outcome of islands' strategic geopolitical position and role in WWs, location at the crossroad of sea trade routes, and the establishment of important civilizations back in the ancient times [3]. Based on the abundance/value of its natural and cultural underwater assets, Greece in general and *insular regions* in particular constitute ideal places for the development of *diving tourism*; and are already attracting the interest of diving community for gathering relative experiences in *ancient wrecks*, strongly connected with local mythology. This interest is expressed by the steadily increasing number of divers visiting Greece (increase by 42% in 2011–12 and 10% from 2012–13, counting about 230,000 divers in 2013) [48]. Despite this significant potential, diving tourism in natural and cultural diving spots in Greece has not yet attained the required attention and reached its potential.

Policy directions as to the spatial pattern of tourism development in Greece are provided by the Special Framework on Spatial Planning and Sustainable Development for Tourism (2009, as revised in 2013) [49], featuring strategic guidelines for the flourishing of the sector. Aiming to promote a more balanced and sustainable deployment of the sector, it places emphasis on alternative tourism forms, among which lie maritime tourism and more specifically *cruise, yachting and diving tourism.* The latter is promoted in already tourist developed but also developing areas; and roughly sketches territories that dispose particular marine natural and cultural assets, attractive to this niche market. Amendment of this framework in 2013 sustains this focus on alternative tourism forms, stressing also the high risks faced by coastal and island regions due to overtourism and impingement of their carrying capacity.

This policy framework, however, fell over predictions of the *legislative context*, placing, until recently, *significant obstacles* to diving activity by rendering accessibility of many potential diving sites totally prohibited. This reflected a steadily defensive attitude of the Ministry of Culture and the Ephorate of Underwater Antiquities against recreational diving. Banning accessibility served the goal of protecting submerged antiquities and cultural heritage in potential diving sites. In 2003, protection measures intensify, due to a Ministerial Decision characterizing shipwrecks and aircrafts, submerged in the Greek seas for over 50 years, as *cultural monuments*. Their protection is assured by a buffer zone of 300 m, within which diving was prohibited [6].

The concept of *diving parks*, as an important step for exploiting maritime natural and cultural assets, is firstly introduced in the Greek legislation in 2005, with the enactment of the Law 3409/2005 [50] for *recreational diving*, constituting a milestone for diving tourism in Greece and releasing diving activity, with a few exceptions, along almost the entire length of the country's coastline. Diving sites with significant archaeological value are defined as accessible UAPs, allowing respective activities under specific rules.

Such sites have already been nominated as *protected areas with cultural interest*. In 2014, the legislative framework has taken some further steps forward [51], by expanding diving parks in Natura 2000 MPAs, marine aquaculture, shipwrecks and Accessible Archaeological Sites, opening thus new chances for natural and cultural diving tourism in coastal and insular areas.

Following these developments, at present four UAPs are established in Greece, namely [52]: i) UAP at Methony Bay - Sapienza Island (Peloponnese), established in 2013, in which the ancient 'Granite Columns' and 'Roman Sarcophagi' shipwrecks are located; ii) UAP at Navarino Bay (Peloponnese), established in 2013, hosting the newer "Irene Serenade" shipwreck; iii) UAP at Pavlopetri (Lakonia), established in 2016, hosting the first seabed museum, where one of the most ancient sunken prehistoric settlements of the world lies (Fig. 7); and iv) the recent UAP at Alonissos and Northern Sporades established in 2020 (Fig. 8), hosting a classical shipwreck of the 5th century BC, which carried over 4.000 amphoras and was revealed in 1985 at a depth of 22–23 m.



Fig. 7. UAP at Pavlopetri Lakonia – Greece, Sunken Ancient City, Source: [53]



Fig. 8. UAP at Alonissos and Northern Sporades, Source: [54]

By getting insight into the above-mentioned UAPs, the importance of the Greek *underwater cultural assets* is unveiled, with reference to ancient but also more recent shipwrecks or archaeological remains of ancient cities. The ever-increasing interest for diving permissions in the Greek seas leads to intensified efforts for establishing more UAPs, by sustainably exploiting the shipwrecks in Kea island, promoting the diving sites of '*HMHS Britannic'*, '*S/S Burdigala*' and '*Patris*' as well as the submerged city of Epidaurus; the yet unexploited site in Antikythera island; the *58 ancient shipwrecks* recently discovered in the neighborhood of Fournoi island, characterized as the *shipwreck capital of the world*; the Destroyer *'Queen Olga'* in Leros island, to name a few [55]. These, although the largest, and of high historical significance, shipwrecks in the Mediterranean Sea, remain unexplored, unexploited and, most importantly, *unprotected*.

Further improvements of the contemporary legislative framework include the incorporation, in 2018, of the European MSP Directive 2014/89/EC into the Greek legislation, broadening the *strategic marine spatial planning* context of the Greek policy, although the relevant strategic planning endeavor is not yet accomplished; and a recent law [56] placing *diving tourism* as a core activity along the Greek coastline. These are expected to alter the scenery of diving activity in Greece, giving prominence to its fabulous natural and cultural reserves as diving sites. Protected, previously inaccessible, diving spots are expected to raise divers' interest, abrogating seasonality drawbacks and creating multiplier effects in terms of quality of tourist flows as well as tourism entrepreneurship

and new employment opportunities to the benefit of the local, regional but also national level.

5 Discussion – Open Issues

The importance attached to the protection and sustainable exploitation of maritime, natural and UCH resources as a means for local/regional development is nowadays highly acknowledged. Insular territories in the Mediterranean seem to be privileged in this respect due to the abundance of relevant resources, witnessing the long history and transactions taking place among their inhabitants. These resources can render Mediterranean insular territories globally attractive *diving tourism spots*, thus broadening their role/value in the tourist scene and their potential to become environmentally- and culturally-responsible, high class, all year-round tourist destinations. The above mentioned examples reveal that this potential is already partially captured; and is framed by the availability, type, narrative and value attached to these resources, as well as legislative context and related spatial tools. Thus the Spanish and Italian examples present cases where *MPA's* are established to protect these resources as well as monitor/control diving activity for serving sustainability objectives. Malta, despite lacking a fully regulatory regime for diving sites, seems to rate high as an outstanding example of popular diving spots, falling into the 7 declared *conservation areas*. Greece, despite endowed in natural and UCH resources, has quite recently taken steps to get into the diving tourism niche, though still lacking a compact national maritime spatial strategy as well as detailed spatial delineation/documentation of relevant resources.

Speaking from a (spatial) planning perspective, however, preservation and sustainable exploitation of maritime resources seems to be a rather *wicked planning and governance issue*, with multiple *spatial dimensions*. It also depicts important *challenges and open issues* that need to be properly handled, especially when one comes to UCH as the main focus of diving experience, *being mostly the case in the Greek coastal and marine environment*. Some critical thoughts on this topic are summarized in Fig. 9 and are shortly discussed in the following, presenting the need for a more *integrated and holistic approach* on the topic that stresses the multiple spatial, developmental, sectoral, societal, governance, etc. dimensions of the sustainable exploitation of maritime natural and cultural resources in Mediterranean islands for diving tourism.

At first, diving tourism, while grounded on the marine environment, is tightly interwoven with the coastal but also the land part of island communities; and should be perceived along the view of an *integrated approach* of land and maritime, natural and cultural islands' resources; and as part of the spatial, historical, economic, social, cultural etc. pathways through time of respective communities. This also brings to the forefront the need for *communities' engagement* in planning diving tourism products, realizing that underwater natural and especially cultural assets are most of the times closely linked to parts of the historical past of localities and touch upon social and ethical issues that need to be valued and sensitively dealt with. Additionally, narrative used for promoting cultural diving tourism has to respect memory and values of indigenous people and, furthermore, be enriched by them (historical facts, material, stories etc.), leading thus to a *community-based and value-driven* challenging narrative for establishing diving tourism activity in harmony with their territories and value systems.

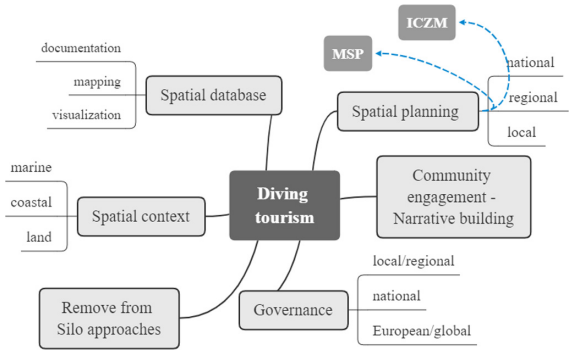

Fig. 9. Planning and governance concerns for diving tourism deployment in island regions

The *spatial context* relates also to the location identification of natural and especially cultural resources for demarcating potential diving sites. This holds true especially for UCH, a large number of which remains unknown; while lying in a rather difficult to access and manage environment – the marine one –, full of risks and unexpected challenges. Geolocating UCH (exact position, depth etc.), documenting (e.g. status, condition), identifying surrounding conditions and other natural assets, mapping and visualizing are necessary prerequisites for ensuring UCH sustainable and resilient exploitation, but also visitors' safety. Technology is a great ally in this respect. In fact, progress in *underwater technology* provides new potential towards the surveying, identification, navigation, excavation and meticulously documentation of UCH. Remarkable progress is also noticed in technologies that support wider communication of UCH objects to the public, e.g., Virtual Reality (VR) and the latest three-dimensional (3D) reconstruction techniques [57]. The integration of the above information into a *spatial database*, enriched with additional general but also specific content on the location and surrounding area, can form the basis for a more coherent and systematic endeavor to promote diving spots or networks of diving sites in the Mediterranean; while filling also the existing gap in the field and supporting *protection, preservation and monitoring* of submerged natural and cultural heritage from various risks ahead.

Marine Spatial Planning and *integrated coastal zone management*, as specific tools for regulating marine and terrestrial space and their interrelationships, are also critical issues as far as the *spatial context* is concerned. By following an *ecosystem-based approach*, MSP aims at matching maritime space to various uses, in a way that reduces conflicts and strengthens cross-sectoral cooperation and synergies' creation [58, 59]. MSP is thus crucial for demarcating specific diving tourism sites in harmony with the rest of maritime activities and assuring protection of underwater assets and safety of divers, while handling competition of maritime uses. Additionally, MSPs have to be in coordination with ICZM plans, predicting e.g. land-based infrastructures for diving tourism as well as other uses that have a competing counterpart in the marine environment and may contradict diving tourism activity. Strategic directions of MSP and ICZM need to be given at the national context, further detailed at the regional and local level, following a combined bottom-up and top-down approach. However, speaking of Greece,

a strategic plan for managing maritime space and coastal zones does not yet exist, leading thus to fragmented efforts of locating marine or diving parks at the regional/local level. This becomes even more crucial in case of UCH, taking into account the lack of the necessary knowledge as to the status and preservation needs of UCH for its harmless and resilient exploitation as well as safe diving conditions.

The so far *'silo' approach* of natural and especially UCH handling, i.e. a monodisciplinary consideration and a kind of 'ownership' mostly taken by relevant scientific groups and professionals, has so far been a *barrier* for their interdisciplinary and integrated consideration, placing them in the context of sustainable local development for opening up new opportunities to island communities. Particularly in the context of Mediterranean island communities, this heritage can be a valuable resource for reaching sustainability objectives; while, at the same time, forming the ground for cultivating awareness and respect from both the local society and visitors. In case of UCH, for example, Greek experience demonstrates that 'silo' approaches, mainly due to the rather fragmented legislative framework, but also coupled with a well-rooted mindset of 'ownership' of submerged archaeological heritage by marine archaelogists and heritage scientists [60], has so far led to legal and bureaucratic deadlocks; and resignation from the potential of an important developmental pillar, especially for isolated and lagging behind insular communities.

Finally, speaking of the value of *UCH*, it is worth noting the saying of Ms. Nisha, UNESCO's Director and Representative to the Pacific States in the Side Event on 'Safeguarding Underwater Cultural Heritage for Sustainable Development', stating that *"UCH holds the history of the planet and human civilization that is now underwater"*. This statement features the *glocal nature of UCH*, reflecting its crosscutting value at various spatial scales and communities; and unveiling the glocal responsibility towards its protection. Same holds for *underwater natural heritage protection* as well. Risks affecting Mediterranean maritime natural and cultural heritage are further intensified under the CC era; and call for coordinated efforts at various spatial and decision-making levels. *Governance aspects* and shared action seem to be of particular importance for preserving the large number of UCH and the spectacular underwater seascapes and marine life in Mediterranean waters, both being at stake. Such a governance perspective places forward *opportunities* but also *barriers*; while addressing a *multitude of actors* in an effort to protect this legacy and carefully plan sustainable and resilient ways for sharing these common goods. In case of the Mediterranean and its abundant coastal and insular localities, successful *governance of this maritime heritage* can set the foundations for entrenching sustainable, human-centric, long term and qualitative sea-related future development paths, the way these Mediterranean communities are accustomed to go through centuries.

References

1. Koutsi, D., Stratigea, A.: Releasing cultural tourism potential of less-privileged island communities in the Mediterranean: an ICT-enabled, strategic and integrated participatory planning approach. In: Marques, R.P., Melo, A.I., Natario, M.M., Biscaia, R.B. (eds.) The Impact of Tourist Activities on Low-Density Territories: Evaluation Frameworks, Lessons, and Policy Recommendations. Springer Nature, Berlin (2020)

2. Baldacchino, G.: Island landscapes and European culture: an "island studies" perspective. J. Mar. Isl. Cult. **2**, 13–19 (2013). https://doi.org/10.1016/j.imic.2013.04.001
3. Koutsi, D., Stratigea, A.: Unburying hidden land and maritime cultural potential of small islands in the Mediterranean for tracking heritage-led local development paths. Heritage **2**(1), 938–966 (2019). https://doi.org/10.3390/heritage2010062
4. Eurostat: Eurostat regional yearbook 2020. Publications Office of the European Union, Luxemburg (2020). https://doi.org/10.2785/98733
5. Williams, A.: Mass tourism, culture and the historic city: theoretical perspectives. Riv. Sci. Tur. Ambient. Cult. Dirit. Econ. **1**, 9–29 (2010)
6. Tsilimigkas, G., Rempis, N.: Spatial planning framework, a challenge for marine tourism development: location of diving parks on Rhodes Island, Greece. Environ. Dev. Sustain. **23**, 1–26 (2021). https://doi.org/10.1007/s10668-021-01296-1
7. Sunlu, U.: Environmental impacts of tourism. In: Kocabulut, Ö., Yozukmaz, N., and Bertan, S. (eds.) Local Resources and Global Trades: Environments and Agriculture in the Mediterranean Region, pp. 263–270. CIHEAM, Bari (2003)
8. Arabadzhyan, A., Figini, P., García, C., González, M.M., Lam-González, Y.E., León, C.J.: Climate change, coastal tourism, and impact chains – a literature review. Current Issues Tourism **24**(16), 2233–2268 (2020). https://doi.org/10.1080/13683500.2020.1825351
9. Koutsi, D., Stratigea, A.: Integrated maritime policy and management of underwater cultural heritage. In: Defner, A., Skagianis, P., Rodakinias, P., Psatha, E. (Eds) 3rd National Conference of Urban and Regional Planning and Regional Development, pp. 565–577. University of Thessaly, Volos (2018) (In Greek)
10. Samarathunga, W., Gamage, D.: Alternative Tourism as an Alternate to Mass Tourism during the Post-COVID-19 Recovery Phase: the Case of Sri Lanka. Advance. Preprint, (2020). https://doi.org/10.31124/advance.12361301
11. Vázquez, R.M., García, J.M., De PValenciano, J.: Analysis and trends of global research on nautical, maritime and marine tourism. J. Marine Sci. Eng. **9**(1), 93 (2021). https://doi.org/10.3390/jmse9010093
12. European Union: Sustainable tourism in the Mediterranean (2012). https://cor.europa.eu/en/engage/studies/Documents/sustainable-tourism-mediterranean/sustainable-tourism-mediterranean.pdf. Accessed 27 Mar 2021
13. Daldeniz, B., Hampton, M.P.: Dive tourism and local communities: active participation or subject to impacts? Case studies from Malaysia. Int. J. Tour. Res. **15**(5), 507–520 (2012). https://doi.org/10.1002/jtr.1897
14. Mograbi, J., Rogerson, C.M.: Maximising the local pro-poor impacts of dive tourism: Sodwana Bay. South Africa. Urban Forum. **18**(2), 85–104 (2007). https://doi.org/10.1007/s12132-007-9002-9
15. PADI (Professional Association of Diving Instructors): Worldwide Corporate Statistics 2019. Data for 2013–2018 (2019). https://www.padi.com/sites/default/files/documents/2019-02/2019%20PADI%20Worldwide%20Statistics.pdf. Accessed 8 Mar 2021
16. Dwyer, L., Cooper, C., Edwards, D., Mistilis, N., Roman, C., Scott, N.: Megatrends Underpinning Tourism to 2020 Analysis of key drivers for change. CRC for Sustainable Tourism Pty Ltd (2008)
17. Jack, A.: Niche tourism within small island tourism economies: an analysis of scuba tourists in Bermuda. Master thesis. Arizona State University (2012)
18. Dimmock, K., Musa, G.: Scuba diving tourism system: a framework for collaborative management and sustainability. Mar. Policy. **54**, 52–58 (2015). https://doi.org/10.1016/j.marpol.2014.12.008
19. Kunwar, R.R., Karki, N.: A study of dark (disaster) tourism in reconstructed. Gaze J. Tour. Hosp. **11**(1), 140–180 (2020)

20. UNESCO: Convention on the protection of the underwater cultural heritage. In: General Conference of UNESCO. UNESCO, Paris (2001)
21. UNCLOS: United Nations convention on the law of the sea. United Nations, New York (1982)
22. Gibbs, M.: Cultural site formation processes in maritime archaeology: disaster response, salvage and Muckelroy 30 years on. Int. J. Naut. Archaeol. **35**(1), 4–19 (2006). https://doi.org/10.1111/j.1095-9270.2006.00088.x
23. COM(2007)575 final: 'An Integrated Maritime Policy for the European Union', Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Commission of the European Communities, Brussels, 10 Oct 2007
24. Directive 2008/56/EC: Establishing a framework for community action in the field of marine environmental policy – Marine Strategy Framework Directive. European Parliament and the Council of 17 June 2008, Official Journal of the European Union, L 164/19, 25 June 2008
25. Council Decision 2009/89/EC: On the signing, on behalf of the European Community, of the Protocol on Integrated Coastal Zone Management in the Mediterranean to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, Official Journal of the European Union, L 34/17, 4 Feb 2009
26. COM (2011) 244 final: 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020', Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Commission of the European Communities, Brussels, 03 May 2011
27. COM (2012) 494 final: Blue Growth Opportunities for Marine and Maritime Sustainable Growth, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, European Commission, Brussels, 13 Sep 2012
28. Directive 2014/89/EU: Establishing a Framework for Maritime Spatial Planning. European Parliament and European Council. Off. J. Eur. Union, L257, 23 July 2014
29. COM (2020)380 final: 'EU Biodiversity Strategy for 2030- Bringing nature back into our lives', Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Commission of the European Communities, Brussels, 20 May 2020
30. SWD (2017)128 final: Report on the Blue Growth Strategy - Towards more Sustainable Growth and Jobs in the Blue Economy, European Commission, Brussels, 31 Mar 2017
31. Wreck.eu (2021). https://www.wrecksite.eu/. Accessed 14 Mar 2021
32. IYC (2018). https://iyc.com/10-top-dive-spots-mediterranean/. Accessed 15 Mar 2021
33. Vilas, D., et al.: The effects of marine protected areas on ecosystem recovery and fisheries using a comparative modelling approach. Aquat. Conserv. Mar. Freshw. Ecosyst. **30**(10), 1885–1901 (2020). https://doi.org/10.1002/aqc.3368
34. Torroella de Montgrí i l'Estartit Turisme: Medes Islands (2020). https://visitestartit.com/en/medes-islands/. Accessed 5 Mar 2021
35. Xtremesports.com. http://www.xtremespots.com/water-sports/scuba-diving/tunel-del-dofi-dolphins-cave-medes-islands-catalonia-spain/#!. Accessed 14 Mar 2021
36. El Rei Del Mar Diving Centre. https://www.elreidelmar.com/en/diving-spots. Accessed 14 Mar 2021
37. Palau-Saumell, R., Forgas-Coll, S., Sánchez-García, J., Prats, L.: Motivation and attachment to a diving destination: the case of Medes Islands (Catalonia, Spain). J. Vacat. Mark. **25**(3), 301–319 (2019)
38. Lucrezi, S., et al.: Scuba diving tourism systems and sustainability: Perceptions by the scuba diving industry in two Marine Protected Areas. Tour. Manag. **59**, 385–403 (2017). https://doi.org/10.1016/j.tourman.2016.09.004

39. Portofino Divers. https://portofinodivers.com/en/diving/portofino/marine-park.html. Accessed 8 Mar 2021
40. Betti, F., et al.: On the effects of recreational SCUBA diving on fragile benthic species: the Portofino MPA (NW Mediterranean Sea) case study. Ocean Coast. Manag. **182**, 104926 (2019). https://doi.org/10.1016/j.ocecoaman.2019.104926
41. Portofino Divers. https://portofinodivers.com/en/diving/wreck/mohawk-deer.html. Accessed 10 Mar 2021
42. Saayman, M., Saayman, A.: Are there economic benefits from marine protected areas? An analysis of scuba diver expenditure. Eur. J. Tour. Res. **19**, 23–39 (2018)
43. Bustelo, M.: Malta & Gozo: Breathtaking Places to Dive in the Mediterranean Sea (2020). https://blog.padi.com/2020/12/14/malta-gozo-breathtaking-places-to-dive-in-the-mediterranean-sea/. Accessed 21 Feb 2021
44. Depares, R.: Wreck diving to be regulated with new laws protecting underwater heritage (2019). https://timesofmalta.com/articles/view/wreck-diving-to-be-regulated-with-new-laws-protecting-underwater.702792. Accessed 6 Mar 2021
45. Malta Dives.com. https://maltadives.com/sites/mvcominoland-xattlahmar/en, https://maltadives.com/sites/stmichael-marsaskala/en. Accessed 14 Mar 2021
46. Beriatos, I., Papageorgiou, M. (eds.): Spatial and Environmental Planning: Development and Protection. University Publications of Thessaly, Volos (2013)
47. Piperis, S.: Greek Maritime Space—A Geographic Approach of its Dynamics with an Emphasis on Energy Sector. Master's thesis, School of Architecture, National Technical University of Athens (2017)
48. Reizidou, E.: Underwater Culture and Diving Tourism. Feasibility study. MOU, Ministry of Economy, Development and Tourism, Athens (2016)
49. Special Framework for Spatial Planning and Sustainable Development for Tourism and strategic environmental impact assessment. Official Government Gazette 1138/11–06–2009
50. Law 3409/2005: Recreational diving and other provisions. Official Government Gazette 273/4–11–2005
51. Law 4296/2014: Replacing article 13 of Law 3409/2005). Diving parks - organized diving Official Government Gazette 214 A/02–10–2014
52. BLUEMED: State-of-the-art analysis of Underwater Museums and Diving Parks. Deliverable 3.2.1, INTERREG Mediterranean, Programme co-financed by the European Regional Development Fund (2017)
53. Novo Scriptorium: Pavlopetri, Greece; a submerged prehistoric town. https://novoscriptorium.com/2019/07/17/pavlopetri-greece-the-oldest-known-submerged-town-in-the-world/. Accessed 27 Mar 2021
54. Greek Reporter: Underwater museum of peristera: the parthenon of shipwrecks. https://greekreporter.com/2021/05/31/diving-into-greeces-heritage-experience-of-a-lifetime-at-ancient-wreck/. Accessed 27 Mar 2021
55. Dionisia, K., Stratigea, A.: Leveraging underwater cultural heritage (UCH) potential for smart and sustainable development in Mediterranean islands. In: Gervasi, O., et al. (eds.) ICCSA 2020. LNCS, vol. 12255, pp. 237–252. Springer, Cham (2020). https://doi.org/10.1007/978-3-030-58820-5_19
56. Law 4688/2020: Special forms of tourism, provisions for tourism development and other provisions. Official Government Gazette 101/A/24–5–2020
57. Argyropoulos, V., Stratigea, A.: Sustainable management of underwater cultural heritage: the route from discovery to engagement — open issues in the mediterranean. Heritage **2**(2), 1588–1613 (2019). https://doi.org/10.3390/heritage2020098
58. Panagou, N., Kokkali, A., Stratigea, A.: Towards an integrated participatory marine/coastal and territorial spatial planning approach at the local level-planning tools and issues raised. Reg. Sci. Inq. **10**, 87–111 (2018)

59. Gómez-Ballesteros, M., et al.: Transboundary cooperation and mechanisms for maritime spatial planning implementation. SIMNORAT project. Marine Policy **127**, 104434 (2021). https://doi.org/10.1016/j.marpol.2021.104434
60. Nutley, D.M.: Look outwards, reach inwards, pass it on: the three tenures of underwater cultural heritage interpretation. In: Jameson, J.H., Scott-Ireton, D.A. (eds.) Out of the Blue: Public Interpretation of Maritime Cultural Resources, pp. 33–51. Springer US, Boston, MA (2007). https://doi.org/10.1007/978-0-387-47862-3_3